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ABSTRACT

Australia's new information technology training package emphasizes assessment occurring in the workplace or in a simulated work environment. The options available to Australia's technical and further education (TAFE) institutes in delivering institutionalized training to meet this requirement were explored. The following four options were explored: (1) do nothing different except perhaps to change the titles of assessment instruments from "assignment" to "case study"; (2) require an industry placement component for each award from Certificate II onward; (3) only take traineeships; and (4) require a practice firm component for all assessments. A combination of all four methods was deemed the best and most feasible way of meeting the requirements of the training package and students. A model for work-based assessment was then developed. According to the model, each subject would be assessed by a combination of formative assessment throughout the subject and a summative assessment that are based on a common theme related to a particular fictitious enterprise across all subjects. The model integrates the typical classroom-based delivery, structured support classes, and a final year project, and it contains elements of all four delivery options. Possible implementation issues, including being unable to find suitable industry placements for students, were considered. (MN)

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IT Training Package and the workplace context - HOW?

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The Information Technology (IT) Training Package has an obvious emphasis on assessment occurring in the workplace or in a simulated work environment. The challenge for educational institutes is how to deliver institutionalised training and meet this requirement. How will it differ from past practices? There is some hope of achieving this requirement if we are working with small student numbers and one qualification, but how do we handle the workplace context emphasis if we have enrolments in the hundreds or thousands across multiple qualifications?

The Evidence Guide section from many of the competency units in the IT Training Package state that 'Assessment of this unit of competency will usually include observation of real or simulated work processes and procedures...'. At the Douglas Mawson Institute of TAFE IT Department, we investigated the possible approaches, such as only taking on traineeships, requiring a Practice Firm component for all assessments, requiring an industry placement component for each award, changing assignments to case studies etc. This paper discusses the options considered and explains the approach finally taken with unexpected success.

We begin this paper with a brief summary of the options we considered.

Option 1: Do nothing different. Perhaps change the titles on our assessment instruments from Assignment to Case Study.

This would be the easiest solution, but this is not really in the spirit of the training packages. We currently assess using a combination of assignments and tests. Most assignments are written based on some scenario for a fictitious business, and test questions are designed so that the student can complete the test in 2 hours. However, it is questionable that this assessment strategy is really a simulation of a workplace. This argument is being used.

Obviously, the workplace is often not so sterile and problems are not presented in the nice neat packages that assignments usually are. It can be argued, however, that this is necessary during the learning process to gradually develop a person's skills and knowledge in each functional area (Design, Build, Test, Support etc). The problem with this direction is that it does not currently present a consistent theme across subjects. There is no relationship between the Introduction to Programming assignment, the Advanced Spreadsheet assignment and the Introduction to Computing assignment. Certainly in a real workplace the business does not change when working in different functional IT areas. For example, if you are working for a retail business installing their LAN, then you don't suddenly get allocated a task that involves producing a web page for a car manufacturer. We do not believe this approach alone is a suitable course to take. Its main appeal is its simplicity.

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Option 2: Require an industry placement component for each award from Certificate II onwards.

This has educational appeal, but is it realistic? This means that a person cannot get a result in any competency until they demonstrate the competencies by performing certain tasks in an industry placement.

The biggest difficulty is in finding industries that are willing to take on students for the purpose of assessment. In our case, 150-200 students would have to be placed at the end of Certificate III in such a way that we can assess hardware, network, operating systems, applications and communication-related competencies. Is this possible?

Many units indicate in the Evidence Guide section that 'Assessment of this unit of competency will usually include observation of real or simulated work processes and procedures…' and that 'competence in this unit needs to be assessed using formative assessment to ensure consistency of performance in a *range of contexts*' (emphasis added). The formative assessment in a range of contexts is not possible by simply having a component of industry placement. Perhaps the formative assessment could be handled by giving a result in a subject but not in the competencies until the industry placement has occurred, at which time the summative assessment can occur and the units can be accredited. Perhaps we have a group of competencies that are more enterprise based (such as Relate to client on a business level, Communicate in the workplace etc) that are only achievable through the completion of a project within an industry placement. We then accept the use of assignments in each subject as our simulation of the workplace-based assessment for those units. How do we fit this in a 6-month full-time course?

Overarching all of this is the problem that we began with – how do we find industry placement for so many students?

Option 3: Only take on traineeships.

This would be wonderful. Unfortunately there are similar problems to the previous option - how do we find enough industries willing to take on a trainee? How do we cater for part-time people; people who already have jobs that are wishing to retrain? This is a idealistic solution but not a realistic one. Nevertheless, considering the training package emphasis on the workplace, increasing the number of trainees should be one of the goals.

Option 4: Require a practice firm component for all assessments.

When we started looking seriously at work-based assessment, we felt that the practice firm approach would be the best. A practice firm is a simulated work environment where students could go to 'work' and trade with other practice firms from around the nation and in fact around the world. The practice firm would run as a business would, with its own purpose, supervising staff and premises. Students attending the practice firm would be required to present themselves professionally at all times. The practice firm would have processes and procedures in place to ensure

that the experience was as meaningful as possible. Ideally, it would be sited off campus, with students given the options of attending the practice firm during the semester, or preferably, in a block at the end of semester.

In reality, our wide range of clients – full-time, part-time, flexible delivery and Traineeships at the Certificate II, Certificate III, Certificate IV and Diploma levels - makes it very difficult to find an ideal solution. We believe a practice firm can play a role, but alone it has similar problems to industry placement – including the logistics of putting all students through such a firm.

The practice firm would provide a more controlled environment, with experienced educationalists and technically competent coordinators. It would assist with placements for part-time students, provide a pre-placement option for students that are struggling, and allow our 50+ auspiced schools to place some of the increasing number of IT VET students.

The preferred solution

The DMIT Information Technology department felt that a combination of all the above methods would best meet the requirements of the training package and students, and be achievable by the Institute. This led to the development of our model for work-based assessment.

DMIT information technology model for work-based assessment

Each subject is assessed by a combination of formative assessment throughout the subject (which may be verified by a supervised test at the end) and a summative assessment. The assessments are based on a common theme related to a particular fictitious enterprise across all subjects. This is essentially assessment option one, with a better connection between subjects. In other words, it is what we do now with some across-subject coordination of assessments and resources. This approach is focused on the entry level awards of Certificate II and Certificate IV (Client Support) where we have developed textbooks customised to the competency groupings in our training strategy. For higher-level qualifications, the theme will continue in the assessment instruments but obviously not in the off-the-shelf textbooks.

The enterprise that the subject assessments relate to will need to be 'attended' to gain the enterprise skills appropriate for that level, but those enterprise skills cannot be accredited until the industry placement is done (next paragraph). The enterprise will also supply technical support for the assignments in the subjects. This is not much more than the support classes we already have. The difference is that the early support classes will provide the theory for the enterprise-style units, eg Communicate in the workplace, Work effectively in an IT environment, Apply OHS procedures, and Receive and process oral and written communications (all Certificate II examples).

There will be a requirement for industry placement for each award. This is a combination of option 2 and 4 from the discussion paper. This industry placement ranges from two weeks at the Certificate II level to eight weeks at the Diploma level. The award can only be given once the industry placement occurs, allowing for a

summative assessment of the enterprise skills and one subject area (eg applications, networks, hardware - (Certificate III examples). This is essentially our current project subject, but available at each award level. Students who do not wish to exit can defer their industry placement, and undertake a longer work placement at the end of their studies. This differs from the current project, as it requires *attendance* in the industry as well as the completion of a task (one or more!).

Industry placements will be organised by the Institute unless otherwise requested. When we cannot find industry placement, then we use our practice firm. Our practice firm is a Contracting Agency that provides industry placements for IT professionals in a timely fashion through good industry connections. This Contracting Agency will have employees, accounts, marketing, networks, databases, a webpage etc.

Overall, the model is an integration of the typical classroom-based delivery, structured support classes and a final year project, and contains elements of all options discussed earlier. We believe it follows the philosophies of the training package, particularly its **emphasis on competence in a workplace context**, the use of **holistic assessment** strategies and the **formation of industry partnerships**.

The concern in being able to place all students (eventually in the order of 300-400) still exists, but this emphasises the need for appropriate strategies, such as developing industry partnerships and industry-based practice firms.

Some of the issues we addressed

When does the student need to complete industry placement?

Students will not be eligible to gain an award until they complete the industry placement component of that award. This is no different to needing to complete other assessment instruments or in fact other more technical IT subjects. Students who are continuing with their studies can defer the industry placement until a higher-level qualification. In this situation a longer work placement will be necessary. In other words, the industry placement can be left until the exit point, but the total number of hours in industry must be at a suitable level.

What happens if a suitable industry placement cannot be found for the student?

If industry placement cannot be found then students will have to attend the Institute's practice firm.

Can a student find his or her own industry placement?

The student can suggest a firm where he/she wishes to undertake work placement. This business would then be assessed by Institute staff to determine whether it was appropriate for the industry placement component of the course.

How does a student who has a full-time job or has limited availability take industry placement?

Part-time students who cannot take day-time industry placement will have to commit to a Practice Firm session run nightly.

What are the benefits for the student?

Students will exit with workplace experiences – no matter which award level they exit at. Students will gain industry contacts, and be able to use their placement as experience in resumes when seeking future employment. Students may also be offered positions as a result of their placement.

Implementation

Enrolment in work placements was automatically part of enrolling in theory subjects called Enterprise Skills (Certificate II) and Enterprise Skills (Certificate IV). Typically, the Enterprise Skills subjects contain the 'soft skills' - eg Apply occupational health and safety procedures; Communicate in the workplace; Work effectively in an information technology environment; Participate in a team; Apply problem solving techniques to achieve organisational goals; and Receive and process oral and written communication.

These theory subjects were designed to check that students gain the underpinning skills and knowledge to enable them to perform the tasks in a workplace context. They concentrate on the 'what' and 'why' aspects and verify that students have achieved the required level of knowledge and skill by using typical assessment tools such as case studies and role plays. These assessment instruments were intended to follow a fictitious business scenario matching that used by other IT technical subjects, such as Application Packages and Systems Maintenance.

The industry placement would then concentrate on gathering evidence that the students can then apply to the 'what' and 'why' theory in a workplace context. Businesses would have to be vetted to ensure appropriate occupational health and safety procedures, IT infrastructure and best practice processes. The assessment in the workplace would also require evidence gathering using traineeship-type tools in the form of workplace reports, site visits by qualified workplace assessors and student log books. Although the focus of the assessment would be the enterprise competencies, the tools would also allow students to record the technical areas applied during their placement. These technical areas, such as Use advanced features of computer applications, must have been assessed in typical Institutionalised delivery, but would allow students to gather evidence of their ability to perform these tasks in a workplace context for their own resumes.

The risk of placing students not ready to perform in a workplace context was flagged and processes consisting of interviews and the use of some formative assessment tools were developed.

We definitely did not have enough resources or industry contacts to implement the necessary processes to handle the placements ourselves, so we found an appropriate industry partner.

From the inception of our training package implementation in semester 1 2000, we have handled two semesters worth of Certificate II students and one semester of Certificate IV (Client Support) students.

The industry partner successfully placed 46 Certificate II and 21 Certificate IV Client Support students from our 2000 training package delivery.

The following table summarises the results.

	Cert II Sem 1 and Sem 2 (2000)	Cert IV Sem 2 (2000)
Students eligible for placement	82	42
Students opting out of placement*	19	18
Students targeted for placement in practice firm	17	3
Students placed in industry	46	21
Successful placements – pass	38	19
Unsuccessful placements - fail	8	2
Students gaining employment through placement	4	3

* Students opting out of placement for varied reasons, eg RCC, Own Employer, Fail Theory subjects, Withdrawals, or not interested in achieving award at this stage.

A project to upgrade all our textbooks to accommodate the common enterprise theme was instigated.

The negative results

Student reaction to the introduction of work placements was mixed. In particular, students were concerned at having to pay to work for someone, and were fearful of it being 'like work experience at school'. Anecdotal evidence suggests that once students have gone through the process of being placed, they appreciate the structured and IT-focused nature of the placement.

A few employers were not happy with the attitude of the student sent to them. Our experiences have led to an improved screening process.

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It became evident that the problems in coordinating the sub-contractor's lead time requirements, our own resulting needs and meeting the course duration limitations are issues that need further investigation.

Unfortunately, the lack of funding for the appropriate level of management of resource development affected the incorporation of the common enterprise theme in the resources. This is being addressed by the recent appointment of a manager to the Resource Development Unit. Furthermore, extra funding has been allocated to improve the quality assurance processes, and work has begun in obtaining another industry partner in this area.

The positive results

The vast majority of students were willing and eager to participate, as they could see the benefits of adding, over the 2-year diploma, almost a total of five months of real workplace experience. The contacts made with industry gave students the feeling that they had the 'foot in the door' to gaining employment once they finished the Diploma.

The industry placement has surprisingly resulted in some early employment outcomes. Seven students intending to complete their studies to the Diploma level have gained full-time employment with the business that provided the workplace experience. We were pleasantly surprised that four of these were at the Certificate II level. The employment to placement ratio is approximately 10%. This result needs to be tempered by the relatively small number of placements at this time. We expect this percentage to reduce over time.

The majority of the employers were keen to continue being involved in the work placement program. Some employers requested that the same student be placed with them as they progressed through the qualifications.

The popularity of our work placement is such that we have received enquiries about joining the work placement program from our old award students, students from other TAFE institutes and people from outside the TAFE system.

The practice firm and DMI

The establishment of an IT practice firm was part of the Training Package implementation strategy. It was particularly important, as already we have experienced difficulty in handling real placements for part-time students and students with irregular time availability.

The DMI Practice Firm was not yet operational, but our approaches to its set up again produced some surprising and exciting results.

Most practice firms are based in an Educational Institution, but it was decided early on that DMI's IT-focused practice firm should be placed in a real business premises. This will enable students to truly feel as if they are attending a business and not just another style of classroom delivery, as may be the case when the firm is located within the educational institution. Furthermore, this approach would allow the use of classroom-based simulations as part of the delivery strategy for any subjects (for

example Networking), whilst ensuring that students can distinguish these classroom-based simulations from the more formal practice firm with its business processes, procedures and behavioural expectations.

The encouraging result from our negotiations with industry for our Practice Firm location was the enthusiastic interest shown by industry. In the end, we had the luxury of choosing a business that was willing to assist in training, have good business practices, policies and procedures, and provide *know-how*, especially in the set-up phase.

The industry partner needed to be a well-established enterprise, located in a well-defined business district, professionally presented and preferably with a large number of industry contacts to assist us in the placement component of our strategy.

We eventually made an alliance with the second largest personnel Placement Company in the world: Speakman and Associates. This partner will bring the business experiences and supply accommodation within the CBD at Speakman House (Pirie Street). As a bonus, they are willing to provide our students with professional presentation and support services. The practice firm, ADMIT Solutions, was created and will be fully functional by May 2001, ready to assist us in implementing our workplace assessment strategy for semester one 2001 students.

As a result of this alliance, Speakman and Associates will take over the industry placement. They will interview all students, match student placement requirements with employers and competency requirements, ensure employers are suitable and provide support to students during their placement.

The Speakman component of the placement process is the same process they use for placing any professional person. This is an invaluable experience for students.

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